

Draft
Summary of Selected State Requirements for NORM

The following sections provide brief summaries of portions of radiation protection requirements for regulation and licensing of NORM for Alabama, Georgia, Louisiana, Mississippi, South Carolina, and Texas. These excerpts of radiation protection regulations are taken from the portions of the NORM requirements that deal with exemption from licensing, and release of equipment and land for unrestricted use. The exemption and release requirements may provide some guidance for development of cleanup criteria for lands used for phosphate mining.

Alabama

Alabama uses two threshold criteria to determine if NORM is present in quantities sufficient to require a license. The first threshold is a radiation exposure rate of 50 $\mu\text{R/hr}$ (including background) at contact with the NORM or NORM contaminated article. The second threshold is a concentration of greater than 5 pCi/g of Ra-226. If either threshold is exceeded, a radioactive material license is required to receive, possess, use, transfer, own or acquire the NORM. Alabama also used the Conference of Radiation Control Program Directors (CRCPD) "Part N, Regulation and Licensing of Technologically Enhanced and Naturally Occurring Radioactive Materials (TENORM)" as a guidance document. [Excerpted from the Alabama Office of Radiation Control website at www.adph.org/RADIATION].

Georgia

Georgia exempts NORM if the materials contain, or are contaminated at, concentrations of:

- 30 pCi/g or less of Ra-226 or Ra-228 in soil, averaged over any 100 m^2 and averaged over the first 15 cm of soil below the surface, provided the radon emanation rate is less than 20 pCi/ $\text{m}^2\text{-s}$; or
- 5 pCi/g or less of Ra-226 or Ra-228 in soil, averaged over any 100 m^2 and averaged over the first 15 cm of soil below the surface, in which the radon emanation rate is equal to or greater than 20 pCi/ $\text{m}^2\text{-s}$,

Materials and other equipment containing NORM are exempt from the requirements of these rules if the maximum radiation exposure level does not exceed 50 $\mu\text{R/hr}$ including the background radiation level at any accessible point.



Louisiana

Louisiana includes the following exemptions for NORM (to exempt the material from licensing requirements).

- NORM Waste: 5 pCi/g or less Ra-226 or Ra-228 above background
- Equipment: Maximum radiation exposure level cannot exceed 50 μ R/hr anywhere on the equipment.
- Land:
 - 5 pCi/g or less Ra-226 or Ra-228, above background, averaged over the first 15 cm, and 15 pCi/g above background averaged over each subsequent 15 cm thick layer of soil;
 - 30 pCi/g or less of Ra-226 or Ra-228 averaged over 15 cm depth increments, if the dose does not exceed 100 mrem in a year.

Mississippi

Mississippi exempts persons who receive, possess, use, process, transfer, transport, store, distribute, and dispose of NORM from licensing requirements if the following requirements are met:

- The materials contain less than 5 pCi/g of Ra-226 or Ra-228 above background; or less than 30 pCi/g averaged over any 100 m², provided the radon emanation rate does not exceed 20 pCi/m²-s.
- Equipment does not have a radiation exposure rate exceeding 25 μ R/hr above background at any accessible point.

For transfer of land containing TENORM for unrestricted use, Mississippi requires that the radium soil concentration be less than 30 pCi/g (average over 100 m²) when the radon emanation rate is less than 20 pCi/m²-s. If the radon emanation rate is greater than 20 pCi/m²-s, radium concentrations are limited to 5 pCi/g averaged over the first 15 cm of soil below the surface, and 15 pCi/g averaged over 15 cm thick layers of soil more than 15 cm below the surface (also averaged over 100 m²) [5/15 criteria].

South Carolina

South Carolina exempts NORM if the materials contain, or are contaminated at, concentrations of:

- 30 pCi/g or less of Ra-226 or Ra-228 in soil, averaged over any 100 m² and averaged over the first 15 cm of soil below the surface, provided the radon emanation rate is less than 20 pCi/m²-s; or
- 5 pCi/g or less of Ra-226 or Ra-228 in soil, averaged over any 100 m² and averaged over the first 15 cm of soil below the surface, in which the radon emanation rate is equal to or greater than 20 pCi/m²-s,

Materials and other equipment containing NORM are exempt from the requirements of these rules if the maximum radiation exposure level does not exceed 50 $\mu\text{R/hr}$ including the background radiation level at any accessible point.

Texas

Texas exempts NORM waste (other than oil and gas) from licensing requirements when soil contains concentrations of NORM that are:

- Less than 30 pCi/g Ra-226 or Ra-228 averaged over any 100 m² and averaged over the first 15 cm of soil below the surface, provided the radon emanation rate is less than 20 pCi/m²-s; or
- Less than 5 pCi/g Ra-226 or Ra-228 averaged over any 100 m² and averaged over the first 15 cm of soil below the surface when the radon emanation rate is equal to or greater than 20 pCi/m²-s.

Texas also includes an exemption for materials and equipment when the maximum radiation exposure rate does not exceed 50 $\mu\text{R/hr}$ including the background radiation level at any accessible point.

State Radiation Protection Program References

<http://www.hsrdo.ornl.gov/nrc/rulemaking.htm>

http://www.ioqcc.state.ok.us/norm/reg/dsp_statereg.cfm

[http://www.crcpd.org/links.asp#State%20Radiation%20Protection%20Programs%20\(U.S.\)](http://www.crcpd.org/links.asp#State%20Radiation%20Protection%20Programs%20(U.S.))